HIGH FREQUENCY VENTILATION IN PEDIATRIC ACUTE RESPIRATORY DISTRESS SYNDROME; A PROPENSITY SCORE ADJUSTED STUDY

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Aims & Objectives: High frequency ventilation (HFV) is frequently used as rescue therapy to avoid excessively high plateau pressures. However, evidence for its use in pediatric acute respiratory distress syndrome (ARDS) is weak. We aimed to investigate the association between the usage of HFV and mortality in children with PARDS.

Methods: Patients with PARDS from 10 pediatric intensive care units across Asia from 2009–2015 were identified. Data on epidemiology and clinical outcomes were collected. Primary outcome was pediatric intensive care unit (PICU) mortality. HFV and non-HFV patients were matched based on a propensity score model. ICU mortality between the matched HFV and non-HFV groups were then statistically compared using Fisher’s exact test.

Results: There was a total of 336 PARDS patients included in this analysis, 130/336 (39%) were treated with HFV during their course of PARDS. The propensity score matching yielded a balanced cohort of 176 patients (88 in the HFV and non-HFV groups respectively). The matched groups had comparable demographics, severity of illness scores and risk factors for PARDS (Table 1). The characteristics of the propensity score model can be found in Table 2. ICU mortality for the matched HFV group and non-HFV group were 31% and 36% respectively. HFV use was not associated with ICU mortality in PARDS (odds ratio (OR): 0.78, 95% confidence interval (CI) 0.41, 1.46; p=0.52).

Conclusions: HFV use was common (39%) in PARDS. The use of HFV was not associated with increased mortality in PARDS.

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STANDARD DOSE (0.1U/KG/HR) VERSUS LOW DOSE (0.05U/KG/HR) INTRAVENOUS INSULIN INFUSION IN THE TREATMENT OF PEDIATRIC DIABETIC KETOACIDOSIS: RANDOMIZED, DOUBLE-BLIND CONTROLLED CLINICAL TRIAL

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Aims & Objectives: To compare the efficacy and safety of low dose against standard dose insulin in the treatment of pediatric diabetic ketoacidosis (DKA).

Methods: Design and Setting: Randomized, double-blind-controlled superiority clinical trial was conducted in pediatric critical care division of a tertiary care academic institute from Oct-2014 to June-2017. Subjects: Children aged ≥2 years with DKA as per ISPAD-2014 guideline. Children with septic shock and inborn error of metabolism were excluded. Intervention: Low dose (0.05U/kg per hour) vs standard dose (0.1U/kg per hour) insulin infusion. Main outcome measures: Primary: Time to resolution of DKA (pH ≥ 7.3, bicarbonate ≥ 15mEq/L, BOHB <1 mmol/L). Secondary: the rate of fall to BG ≤ 250 mg/dL and complications (hypokalemia, hypoglycemia and cerebral edema).

Results: Sixty patients (mean±SD age of 94.7 ± 41.4 months) were randomized to standard dose(n=30) and low dose(n=30) groups. Intention to treat analysis (n=60) was done. Mean±SD time taken to achieve the resolution of DKA was similar in standard vs. low dose group(23.4 ± 17.8 vs. 24.3 ± 12.2 hours;p=0.822). Mean±SD rate of fall in blood glucose to ≤250 mg/dL (59.5 ± 27.6 vs.48.2 ± 30.5 mg/dL/hour; p=0.148) and time taken to achieve this target was also similar (6.4 ± 4.1 vs.5.1 ± 3.4; p=0.206). Complications were similar in both the groups (hypokalemia 14 (47%) vs. 16 (53%);p=0.606) and hypoglycemia 5 (17%) vs. 2 (7%);p=0.424). No patient developed cerebral edema during the therapy.

Conclusions: In pediatric DKA management, low dose and standard dose insulin therapy were associated with similar clinical and biochemical improvement with comparable complications. (CTRI/2014/08/004823).

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IS THE OUTCOME OF PATIENTS WITH INBORN ERRORS OF METABOLISM IMPROVED BY EARLIER INITIATION OF THERAPY?

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Aims & Objectives: Accumulation of toxic metabolites can have devastating effects on the growing brain in children with inborn errors of metabolism (IEM), hence reduction in the level of circulating toxins is a matter of urgency. Both scavenger therapy and haemofiltration (CVVH) have been shown to be useful therapies. However no conclusive data exists on optimal time of starting therapy or safe levels of toxic metabolites. We hypothesised that outcomes are better with earlier treatment.

Methods: This is a retrospective single centre study from the pediatric intensive care unit (PICU) in a tertiary teaching hospital in London, UK. Children who were referred to our PICU via the metabolic or Children’s Acute Transport teams from 2009–2017 with suspected IEM were identified electronically, and their records reviewed. Patients with metabolic acidosis from septic shock or heart disease were excluded.

Results: 36 children with IEM were identified. Mortality was 25%. There was no difference between survivors and non-survivors with regards to age, sex, length of PICU stay, or CVVH duration. In non-survivors compared to survivors, the delay from the time of referral to starting scavengers (mean±SD 2.22 ± 1.30 vs 4.42 ± 5.10 hours) and CVVH (mean±SD 24.07 ± 9.13 vs 16.98 ± 10.15 hours) was not significantly different. The time delay did not influence the final outcome although initiation of CVVH was associated with improved survival (25% vs 83%, p value 0.02). However CVVH was not started in some due to an expected poor prognosis.

Conclusions: CVVH improves survival in IEM but delay in starting scavenger drugs or CVVH did not influence the final outcome.

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EARLY STOPPING OF RANDOMIZED CONTROLLED TRIALS IN PEDIATRIC CRITICAL CARE

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Aims & Objectives: Early stopping of randomized controlled trials (RCTs) occurs for ethical, scientific, and resource reasons. Our objective was to describe the prevalence and characteristics of RCTs stopped early in pediatric critical care.